

## MEDICAL BIOLOGY.

*Biology, General and Medical.* By Prof. J. McFarland. Pp. 440. (Philadelphia and London: W. B. Saunders Co., 1910.) Price 7s. 6d. net.

PROF. MCFARLAND tells us in his preface that "medical science is, in fact, a branch of biology, and should be studied as such." With this opinion we heartily agree, and we were fully prepared to find that the present volume would supply a long-felt want in demonstrating the importance of biological studies from the medical point of view. We still believe that the author has succeeded in doing this, but he has also succeeded in demonstrating the fact that a medical man is not always the most trustworthy authority on biological questions. The plan of the book is interesting, and, to some extent, original, commencing very appropriately with the cosmical relations of living matter and ending with a chapter on senescence, decadence, and death; and the author has successfully avoided the pitfalls of the type-system. Nevertheless, we can hardly share his somewhat curiously expressed hope "that the writing will not be found too technical to be beyond the comprehension of any intelligent reader."

The work is largely a compilation and is of a curiously mixed character, derived partly from text-books—some of a very elementary character—and partly from highly technical writings of a more or less controversial nature. For elementary zoological facts the author appears to have relied largely upon Masterman's "Elementary Text-book of Zoology," and Galloway's "First Course in Zoology," from which numerous illustrations are borrowed. The "New International Encyclopædia" has supplied a superfluity of information upon parasites, arranged zoologically, but we should be sorry to attribute responsibility for the author's statements to any of the works mentioned.

The theory of heredity is treated mainly by means of copious quotations from Herbert Spencer, Darwin, Galton, Weismann, and Adami. The amount of space devoted to the complicated lateral chain theory of the last-named author seems quite out of proportion to that given to other subjects.

We are obliged in justice to our readers to point out that the work contains numerous inaccuracies and misleading statements. Thus, for example, the shell of a tape-worm egg is described as a cell-wall; flagella and cilia are described as rigid protoplasmic threads; the shells of Foraminifera and Radiolaria are said to "find their homologues in the dermal coverings, the limbs, and fins, &c., of the higher animals"; the medusa of Obelia is said to have a water-vascular system, and so on. On p. 103 we are told that the germinal cells have twice the number of chromosomes possessed by the somatic cells, and our astonishment at this statement is only partially abated when we come to p. 189, and find that the author is referring to the doubling of the number of chromosomes which is supposed to take place in the maturation of the germ-cells prior to reduction, and fully realises that the actual gametes have only half the somatic number.

It is, perhaps, of no great consequence to the

NO. 2160, VOL. 86]

general reader or to the medical man if the sponges are defined as "characterised by many incurrent openings and only one excurrent opening. Axially symmetric. Sexually reproductive," but this diagnosis is so strikingly inadequate, and to some extent even incorrect, that it might just as well have been omitted, as might that of the arthropods, which are simply defined as "jointed animals." Moreover, it is always possible that the book may find its way into the hands of a student preparing for examination.

In the chapter on the origin of life the author suggests (or borrows the suggestion, it is not quite clear which) that the power of reproduction may be "only characteristic of such forms as shall have already evolved to a certain point." The possibility of organic evolution without reproduction is, we must confess, a new idea to us, and one upon which we do not think, with the author, that "it may not be unprofitable to speculate."

We can only hope that the more especially medical chapters, dealing with blood relationship, infection and immunity, will be found less open to criticism at the hands of medical readers.

A. D.

## GEOLOGICAL ESSAYS.

*Outlines of Geologic History, with especial reference to North America.* A Series of Essays involving a Discussion on Geologic Correlation presented before Section E of the American Association for the Advancement of Science, in Baltimore, December, 1908. Symposium organised by B. Willis; compilation edited by R. D. Salisbury. Pp. viii+306. (Chicago: University of Chicago Press; London: Cambridge University Press, n.d.) Price 6s. net.

SOME of the best qualified geological writers and workers in America, including Dr. F. D. Adams from the Dominion of Canada, have here brought together their views on the correlation of stratified deposits. The series of essays was originally published in the *Journal of Geology*, and forms a text-book of North American stratigraphy, embodying results up to December, 1908. It is illustrated by Mr. Bailey Willis's "paleogeographic maps" of North America, which are a little difficult to read in their black and white shaded form. Our ignorance of what lies beneath the oceans probably gives a false impression of fixity to the continental boundaries in many cases.

The terminology used has been left to the various authors, so that we may welcome Mr. Willis's retention of "Cambrian" as against Mr. Grabau's "Cambric." Prof. Salisbury, as editor, points a warning finger towards Mr. Grabau's preferences on p. 44; but he is unable to save us from the "Beekmantownian" representative of the "Lower Ordovician." Should not, by the by, the correct translation of the French "Plaisancien" be, not Prof. Osborn's "Plaisancian" (pp. 216 and 262), but either "Placentian" or "Piacenzan"?

We have the benefit of the views both of Dr. Adams and Prof. Van Hise as to pre-Cambrian classification. The former urges that the break between the Middle and Upper Huronian in America is at least

as important as that between the Keewatin and the Lower Huronian. Hence he is forced to oppose the division of the pre-Cambrian rocks into Archæan and Algonkian only. The early Palæozoic faunas fall naturally to the care of Dr. C. D. Walcott, who interestingly describes the oldest known Cambrian beds, those of south-western Nevada and eastern California (p. 31). In *Nevadia weeksi*, referred at first to *Holmia*, he recognises a form of trilobite "more primitive than such forms as *Olenellus thompsoni* (Hall) and *Holmia bröggeri* (Walcott.)" This phrase reminds us of the dangers that lie in wait for the palæontologist. Seeing that *Olenellus* was once regarded as expressing the decadence of the Paradoxides type, may not this suggestion of primitiveness arise from the fact that the *Olenellus* fauna occurs in California 5000 feet above these interesting strata?

Mr. Grabau carries on the correlation to "Devonic time," in a paper involving considerable labour. In Mr. Girty's essay on the Pennsylvanian, we notice (p. 125) one of the special points provided for us by America, viz., the occurrence of beds with *Productus giganteus* in California, which can be correlated more easily with the Carboniferous Limestone series of Europe than with the eastern Mississippian (Lower Carboniferous) series of America. Mr. Girty believes that none of the Upper Carboniferous faunas of North America are truly of fresh-water origin. Even the Appalachian facies (p. 128) with *Naiadites*, containing as it also does *Lingula* and "*Aviculipecten*," must at any rate imply brackish water.

It is hardly profitable to indicate isolated passages of interest in a book so full of condensed and well-ordered information. As examples, we may mention in conclusion Mr. White's sketch of the rise of the Devonian flora (p. 140), with its hint of Archæopteris prevalent in the upper series throughout the world; Mr. Williston's account of the faunal relations of early vertebrates; and Prof. Osborn's "correlation of the Cenozoic through its mammalian life." Though primarily intended for the specialist, these essays will do much to bring new life into the teaching and writing of British geologists who are willing to look beyond the seas.

G. A. J. C.

#### THE ANALYSIS OF SYNTHETICAL DYES.

*Tests for Coal-Tar Colours in Aniline Lakes: A Review of the Coal-Tar Colouring Matters generally used in the Lake Industry, and their Behaviour with Distinct Chemical Reagents.* By G. Zerr. Authorised English edition by Dr. C. Mayer. Pp. xii+230. (London: C. Griffin and Co., Ltd., 1910.) Price 10s. 6d. net.

THE complex nature, as well as their ever-increasing number, render the analysis of synthetical dyes no easy matter. The work before us endeavours to fill a vacant gap in analytical literature, dealing as it does with the detection of a large number of these compounds in aniline lakes.

The book is divided into two parts.

Part i. takes account of the lakes which may be prepared from more than three hundred coal-tar colours. The author's experimental results obtained by a study

of the action of selected chemical reagents (caustic soda, sulphuric acid, and stannous chloride in hydrochloric acid), and also of solvents (hot water, alcohol, and acetic acid) on these lakes, are arranged in columns, thus forming a series of tables, which comprise the greater part of the book. More than four hundred lakes are considered, and their behaviour towards sunlight, turpentine oil, and varnish is also mentioned in these lists.

Part ii. indicates the methods of recognising the various coal-tar colours in the lakes. Here also we have a number of tables which are really analytical schemes deduced from the results obtained in Part i., and containing sufficient details to explain their use. We have repeated some of the experiments mentioned in Part i. and have found them satisfactory. The author himself in Part ii. gives us three detailed examples of analysis, which may well serve as models in the investigation of lakes containing one or more colouring matters. The book will no doubt prove a trustworthy guide to those engaged in the analysis of lakes, and also to others who wish to enlarge their experience in the identification of synthetical dyes. Its utility, however, may be enhanced by the addition of a standard colour chart, which will more definitely explain column iv. of Part i., and by a supplementary column (in Part i.), which may include, whenever possible, the constitutional formulæ and systematic names of the various coal-tar colours mentioned by the author, together with any references relating to patents. The translator has done his part well, bringing the work up to date.

It is to be regretted that the translator, before issuing the book, had not worked out a similar table of tests for the coal-tar colours which are manufactured by English firms, as in its present form it distinctly tends to encourage the use of coal-tar colours made abroad as against those made by our own manufacturers.

#### DOMESTICATED ANIMALS.

*Domestic Animals and Plants: A Brief Treatise upon the Origin and Development of Domesticated Races, with special Reference to the Methods of Improvement.* By Prof. E. Davenport. Pp. xiv+321. (Boston, New York, Chicago, and London: Ginn and Co., n.d.) Price 5s. 6d.

THIS volume, we are told in the preface, is intended primarily for high and normal schools in the United States, and also appeals more specifically to the general student. Consequently, it is of the utmost importance that the information it contains should be thoroughly trustworthy. A survey of the sections devoted to groups of animals with which I happen to be more particularly acquainted shows, however, that this is very far, indeed, from being the case.

Take, for example, the statement on p. 96 that all the varieties of domesticated pigeons "have been bred within historic times from the single primitive form, the wild or passenger pigeon." That, in this astounding statement, the author has not by accident written passenger pigeon in place of blue rock, is manifest by the fact that a figure of the former bird is given on